THE PRESCRIBED ADVANTAGE: AN EXAMINATION AND ETHICAL DISCUSSION OF THE GROWING PRESCRIPTION STIMULANT CULTURE

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ABSTRACT

JOSEPH L. MAXWELL IV: The Prescribed Advantage: An Examination and Ethical Discussion of the Growing Prescription Stimulant Culture
(Under the direction of Neil A. Manson)

[The goal of this thesis is to examine the current state of prescription stimulant use, particularly on college campuses, and the impact of the attention-deficit/hyperactivity disorder (ADHD) dilemma. I will first discuss the science explaining and relating ADHD etiology and the effects of stimulant medications on the mind and body. I will then discuss the accepted criteria for ADHD diagnosis and the ambiguity they create. Next I will identify the central issue: the widespread illicit use of stimulant medications, particularly for academic purposes. I will expound on the development of this situation, the influence of the competitive collegiate atmosphere, and the ethical questions that follow. Finally I will discuss alternate paradigms for the regulation of prescription stimulants, and I will conclude by proposing a potentially equitable solution derived from the Principlist system of ethics.]

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INTRODUCTION

Attention-Deficit/Hyperactivity Disorder (ADHD) is an incredibly controversial topic. Debates regarding the legitimacy of this psychological condition have been raging for decades, and even so it seems today that we are still very far from any concrete resolution. Perhaps even more controversial is the use of stimulant medications for treating people with ADHD. Nearly eighty percent of all patients diagnosed with ADHD are prescribed one of a variety of drugs that have been shown to heighten attention and focus and increase memory efficiency **[CDC, 2013]**. While some embrace these medications as miraculous and life changing, many are fearful of the consequences widespread, long-term stimulant use may have for individual users and society as a whole. Even more alarming, a significant trend of illicit prescription stimulant use has emerged in recent years, most noticeably on college campuses. More and more students are discovering that stimulant medications can help them study longer and harder, and for many such advantages can be hard to turn down.

The key questions are immediately apparent: Is ADHD a legitimate diagnosis? Are stimulants really a good form of treatment? Who deserves to benefit from stimulants and who doesn't? How do we go about drawing the line for access to stimulants, and where do we draw it? I want to find the answers to these questions. The goal of this thesis is to tap into the discussion surrounding ADHD,

prescription stimulants, and illicit stimulant use and to find an ethically sound approach for resolving this widely debated issue. I will first attempt to explain the complicated theoretical neuroscience behind the symptoms of ADHD and how stimulant medications work to attenuate these symptoms. I will then discuss the standards for ADHD diagnosis and address several of the issues that the current paradigm presents. These issues will be developed to explain the core problem of this discussion; that is, the widespread illicit use of prescription stimulants for personal benefit. I will then present different methods by which we might address this growing issue, weighing the pros and cons of each. Finally, I will attempt to formulate an ethically sound approach that reconciles certain conflicting principles and may help to provide the elusive resolution to this controversy.

CHAPTER I: THE HARD SCIENCE

To gain a truly informed opinion on the subject at hand, one must understand the science behind it. This includes knowledge of the drugs themselves, their methods of action, and the potential risks associated with their use. Over the last half century, a suite of various pharmaceutical agents has been introduced for the treatment of ADHD. Today, the more commonly prescribed options are all classified as *substituted phenethylamines.* These include methylphenidate (Ritalin, Concerta), dexmethylphenidate (Focalin), dextroamphetamine (Dexedrine), lisdexamfetamine (Vyvanse), and a mixture of dextroamphetamine and amphetamine (Adderall) **[Spencer et al., 1998; WebMD, 2015]**.

Though the exact causes of ADHD are not absolutely known, the current theory promoted by most researchers suggests that the symptoms of this disorder are caused by functional impairment of certain neurotransmitter systems in the brain **[Sulzer et al., 2005; Sydor & Brown, 2008]**. The stimulant medications listed previously reduce the symptoms of ADHD by increasing activity in these systems. Specific actions include increased dopamine transmission in the nucleus accumbens in the mesocorticolimbic pathway and increased norepinephrine transmission in the locus coeruleus and the prefrontal cortex **[Sulzer et al., 2005; Sydor & Brown, 2008]**. These neural pathways are associated with reward and memory processing. The flow of dopamine between neurons in these systems

controls the rate at which information can be processed for memory formation, the level of reward associated with the information processing, and the level of motivation attached to this reward **[Sydor & Brown, 2008]**. The typical results are heightened pleasure response, increased motivation attached to relevant activities (i.e. heightened attention/focus), and enhanced memory processing. These effects are ideal for countering the symptoms of ADHD, and indeed more than 70% of people diagnosed with ADHD show improvements in their symptoms when taking stimulant medications **[CDC, 2013]**. However, the actions of these drugs are not limited to those with ADHD. Virtually anyone will experience the same mental effects, provided that a conservative dosage is maintained.

The side effects associated with stimulant use are many. At a normal pharmaceutical dosage, these effects are generally mild, however they become significantly more intense and dangerous as the dosage is increased **[Sydor & Brown, 2008]**. The most pertinent effects are those on the cardiovascular system. Increased blood pressure (hypertension), increased heart rate (tachycardia), and reduced blood flow to the extremities (Raynaud's phenomenon) are all associated with stimulant use **[NIH, 2015; Sydor & Brown, 2008]**. Metabolic/gastrointestinal side effects include loss of appetite, nausea, increased motility, and weight loss. Respiration is increased, though at safe dosage levels this is generally not so significant as to be noticed. Also, people often experience dry mouth, teeth grinding, and mild tics when on stimulants **[Sydor & Brown, 2008]**. As previously stated, most of these effects are not particularly extreme, and at safe dosages they are

experienced mildly. It is with heightened doses that the effects can become dangerous.

All stimulant medications, particularly the amphetamine derivatives (Adderall, Vyvanse, Dexedrine), can be addictive **[Arria et al., 2008; NIH, 2015; Spencer et al., 1998]**. When taken at a low recommended dosage, the risk for addiction development is extremely low **[FDA, 2007; Kollins, 2008; Shulman, 2008]**. However, when used in excess, especially for recreational purposes, the risk for addiction development increases **[Arria et al., 2008; Arria & DuPont, 2010]**. The tolerance built up by addictive use leads to increased dosage, and this heightens the risk of overdosing. The symptoms of a stimulant overdose are essentially extreme side effect experiences. Extremely high heart rate and blood pressure are typical, and in some cases there may be an abnormal heartbeat. Confusion, severe agitation, rapid breathing, and muscular tremors are also common symptoms of overdose. A combination of all these effects is dangerous and can be physically detrimental, however, with appropriate medical care, stimulant overdoses are rarely fatal **[Spiller et al., 2013]**.

As explained previously, stimulant medications treat ADHD by stimulating activity in a specific suite of neurotransmitter systems. These systems are responsible for memory processing. For instance, when I work to write this thesis, these systems are actively working to encode the information I have read, the thoughts I have had, and the words I have typed into my functional memory, as well as the contextual information about where I was and how I was feeling when I performed this task. However, these systems don't just record these memories.

They are also responsible for associating levels of reward with remembered actions. Activities associated with higher levels of reward are perceived as more exciting and desirable, and activities that are associated with lower levels of reward are perceived as uninteresting and avoidable. Finally, these neurotransmitter systems generate levels of motivation corresponding to the level of reward associated with certain actions. This motivation is generated to promote engagement in high reward activities by increasing focus and attentiveness, which leads to more efficient memory processing, which leads to more reward. This is how the system is meant to function.

The activities that give us the greatest reward become the activities that we are most motivated to engage in. In the environment of human evolution, this brain process was key to survival. Hunting animals, building fire, and making love were all crucial to the survival of man, and in those harsh times performing these activities would have been associated with high levels of reward. This encoded perception of reward in turn, via specific neurotransmitter exchanges, generated levels of intensified motivation toward these activities, resulting in heightened focus and attentiveness for these tasks. Though our lives today are very different than the lives of our early ancestors, these neural pathways still function the same way in our brains. They form memories of activities, associate levels of reward with the activities, and generate motivation based on the levels of reward. This motivation leads to increased memory, increased reward, and increased motivation, thereby ensuring that the individual will continue to engage in these rewarding tasks.

According to the current biomedical model, a patient with ADHD suffers from impairment of these dopamine and norepinephrine systems **[Sulzer et al., 2005; Sydor & Brown, 2008]**. Unless the patient experiences noticeable anhedonia (the inability to feel pleasure), it is likely that the problem lies with the generation of motivation. This would mean that the patient might find many activities perfectly rewarding but still would not experience any sustained internal motivation to engage in those activities. Because of this, the patient would not experience the attention and focus that come with motivation, and therefore would not benefit from the enhanced memory processing that comes with attention and focus. The unfortunate result for people with ADHD is that they find it impossible to keep their minds engaged on any one activity, no matter how rewarding it may be. This can be a truly debilitating condition, making information learning and skill development a constant struggle. Therapeutic doses of stimulant medications help to alleviate this struggle by increasing activity in these neurotransmitter systems and inducing motivation, attention, and focus.

These stimulants do not only increase motivation, attention, and focus in people with ADHD, however. If we think about the underlying factors of this condition, this shouldn't come as a surprise. ADHD is the result of abnormal variations in neurotransmitter activity. It's not because a part of the brain is missing or deformed. It's simply due to the fact that the person consistently has lower levels of dopamine and norepinephrine available in those areas of the brain, with the solution being to take a drug that increases those levels. The reality is that these drugs increase dopamine and norepinephrine activity within these systems in

all brains, regardless of how "normal" they may be. As with every chemical in the body, there is a level for these neurotransmitters that is ideal for maximal motivation, attention, and focus. Lower levels lead to decreases in these functions, and higher levels lead to a sort of neural overload that can be functionally debilitating. In people with ADHD, these neurotransmitter levels are consistently low, and treatment with stimulant medications helps keep them at higher, more functional levels. In people who naturally have consistently high levels of these neurotransmitters, using stimulant medication often leads to excessive levels that hinder cognitive function.

In more normal people, these neurotransmitter levels can vary for different activities. Activities that a person is more talented/proficient at and enjoys are associated with higher neurotransmitter levels, and activities that this person is less talented/proficient at and does not enjoy are associated with lower neurotransmitter levels. It is therefore possible for a person to use stimulant medications selectively to increase motivation, attention, and focus for activities that are perceived as less rewarding. This leads to increased memory processing and general productivity for these tasks, regardless of the perceived rewards.

This might help to clarify why so many non-ADHD students find using stimulants beneficial for academic performance. There are many people out there who do not enjoy school for any number of reasons, and this lack of neurotransmitter-induced motivation tends to generate situation-specific symptoms like those associated with ADHD. Stimulant medications can therefore help boost relevant neurotransmitter activity in these people when they are performing

academic tasks, enhancing performance in essentially the same way they would for a student with ADHD. So how can we determine who has ADHD and who doesn't? The purported answer to this question is the subject of the next chapter.

CHAPTER II: THE DIAGNOSTIC PROCESS

An abnormal psychological condition is best identified as a behavior or experience that: 1) deviates from the societal norm, 2) is somehow maladaptive, and 3) causes the patient consistent/recurrent subjective distress (or sometimes instead causes collective third person distress) **[Lyons & Martin, 2011]**. Attention-Deficit/Hyperactivity Disorder (ADHD) clearly meets each of these conditions. People with ADHD have an unusually low attentional capacity that hinders their ability to learn information and develop skills, which usually results in some subjective distress. However, ADHD is also an inherently ambiguous diagnosis. One does not need to discredit it as a legitimate condition in order to recognize this. As with most mental health disorders, there is no clear method that can indisputably identify ADHD in a patient. Rather, there is a swath of symptoms that, if enough of them are present simultaneously, legitimize a diagnosis of ADHD. The standard process for diagnosis, according to the Diagnostic and Statistical Manual, Fifth edition (DSM-V), is fairly straightforward:

People with ADHD show a persistent pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development:

1. *Inattention*: Six or more symptoms of inattention for children up to age 16, or five or more for adolescents 17 and older and adults; symptoms of

inattention have been present for at least 6 months, and they are inappropriate for developmental level:

- Often fails to give close attention to details or makes careless mistakes in schoolwork, at work, or with other activities.
- Often has trouble holding attention on tasks or play activities.
- Often does not seem to listen when spoken to directly.
- Often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (e.g., loses focus, side-tracked).
- Often has trouble organizing tasks and activities.
- Often avoids, dislikes, or is reluctant to do tasks that require mental effort over a long period of time (such as schoolwork or homework).
- Often loses things necessary for tasks and activities (e.g. school materials, pencils, books, tools, wallets, keys, paperwork, eyeglasses, mobile telephones).
- Is often easily distracted.
- Is often forgetful in daily activities.

2. *Hyperactivity and Impulsivity*: Six or more symptoms of hyperactivity-impulsivity for children up to age 16, or five or more for adolescents 17 and older and adults; symptoms of hyperactivity-impulsivity have been present for at least 6 months to an extent that is disruptive and inappropriate for the person's developmental level:

- Often fidgets with or taps hands or feet, or squirms in seat.
- Often leaves seat in situations when remaining seated is expected.
- Often runs about or climbs in situations where it is not appropriate (adolescents or adults may be limited to feeling restless).
- Often unable to play or take part in leisure activities quietly.
- Is often "on the go" acting as if "driven by a motor".
- Often talks excessively.
- Often blurts out an answer before a question has been completed.
- Often has trouble waiting his/her turn.
- Often interrupts or intrudes on others (e.g., butts into conversations or games)

3. In addition, the following conditions must be met:
   - Several inattentive or hyperactive-impulsive symptoms were present before age 12 years.
   - Several symptoms are present in two or more settings, (e.g., at home, school or work; with friends or relatives; in other activities).
   - There is clear evidence that the symptoms interfere with, or reduce the quality of, social, school, or work functioning.
   - The symptoms do not happen only during the course of schizophrenia or another psychotic disorder. The symptoms are not better explained by another mental disorder (e.g. Mood Disorder, Anxiety Disorder, Dissociative Disorder, or a Personality Disorder).

[DSM-V, 2013]

This wide range of criteria for diagnosis is a testament to this disorder's inherent ambiguity. In fact, it is entirely possible for two people to be diagnosed with ADHD while only displaying two common symptoms (each must present with 5 out of 9 for each symptom grouping). If nothing else, this illustrates how ADHD exists on a spectrum (as do most mental health disorders). Not only can the types of symptoms vary, but the extremity of each symptomatic experience can vary as well. With so much variation in the criteria for diagnosis, the qualifying line becomes extremely blurry. What if an adult patient presents with four of each symptom group, and his symptoms are fairly extreme? How does he compare to an adult patient that presents with five of each symptom group and experiences them only to a mild (albeit noticeable) degree? Is the patient with fewer symptoms truly less deserving of therapeutic intervention?

One of the most ambiguous and troubling criteria is that "several" symptoms must be present in "two or more" settings. How many symptoms are "several"? Four? Five? Six? If a person were truly suffering from ADHD, then wouldn't it be reasonable to expect him to display virtually all of his symptoms across all environments? When considering the biological factors involved in ADHD, it is important to remember that most people are likely to be inattentive and restless in at least some scenarios. The majority of us experience a variety of attentional dispositions—we feel motivated to engage in certain activities and discouraged from engaging in others. This is of course very normal, however many have become convinced that a lack of motivation for some certain activities qualifies as ADHD. It

has become common for people to claim “I have school ADD” or “I’m only ADD when I try to read”. Although difficulty reading and completing schoolwork are the hallmark deficits associated with ADHD, they are certainly not enough alone to qualify for diagnosis.

Let’s consider an example. You meet a person who hates school and struggles to complete his classwork. He has a hard time paying attention in class and usually just daydreams. However, when he gets home, he spends hours every day playing the guitar, immersed in his instrument. He occasionally writes music and lyrics. His parents are frustrated with his academic performance, and every time they confront him, he explains that he just can’t focus at school. Does this person qualify for an ADHD diagnosis? His parents probably think so, but what does the evidence say? He clearly has problems with attentiveness when school is involved, however when he is making music he is completely zoned in. For this reason, I would argue that he does not suffer from ADHD. He is perfectly capable of focusing in certain situations, even if school isn’t one of them. But his parents and teachers aren’t happy with this diagnosis. Why? Because he is clearly “ADHD” at school. And unfortunately it seems that, to many diagnosticians, this is all that really matters. If a student is falling short in school, and he meets a satisfactory amount of the criteria listed previously, then there is a very good chance this student will be diagnosed with ADHD, even if he really only shows symptoms when school is involved. Part of this seems to be derived from the utmost importance we place on academic success. We view slipping academic performance as the worst affliction

associated with ADHD, but the reality is that people with true ADHD suffer in much broader terms.

Ultimately, diagnosis is left up to the informed judgment of our mental health professionals (psychologists and psychiatrists). These clinicians observe, interview, and test their patients using standard methods and, with the DSM-V as a guide, determine whether they believe their patients qualify for ADHD diagnoses. Depending on the diagnostician, this process can be quick and easy or long and arduous. It can take hours or it can take weeks. Once a diagnosis has been made, they move to the next step… treatment.

It will come as no surprise to any reader that stimulant medication is by far the most common form of treatment for ADHD, with up to 80% of people diagnosed with ADHD receiving prescriptions **[CDC, 2013]**. This is not necessarily without reason; the medications do seem to work. However, stimulant medication is not the only treatment method to demonstrate effectiveness. Studies have shown that cognitive-behavioral therapy (CBT), meditation, and exercise can be effective in attenuating the symptoms of ADHD **[Lyons & Martin, 2011]**. However, these treatment methods require regular clinician visits, which require additional time and money. It is often very difficult for clinicians to get their patients back in for multiple/regular visits, and most patients would prefer not to foot the bill for repetitive doctor visits. Not only that, but every non-pharmaceutical method of ADHD treatment requires extensive compliance on the part of the patient. They must buy into the therapy, and they must have the discipline to stick with it for an extended period of time. This is often more than can be expected from most modern

patients. Overall, stimulant medication is usually the cheaper and more convenient option, and therefore by far the most popular choice.

Since 1990, diagnosis of Attention-Deficit/Hyperactivity Disorder (ADHD) in children and young adults in the United States has quintupled, up to nearly 10% of the population ages 7 to 25 in 2013 **[CDC, 2013]**. Approximately 80% of these patients are or have been treated with stimulant medications **[CDC, 2013]**. Today, the U.S. contains 4% of the world's population, yet this 4% consumes around 70% of the world's supply of stimulant medications **[CDC, 2013]**. These are some of the broadest statistics that shed light on the state of ADHD/stimulant affairs in this country. The rate of ADHD diagnosis in the U.S. dwarfs that of any other country. The rate of stimulant prescription for the treatment of ADHD in the U.S. dwarfs the others still further.

These statistics are alarming and logically imply that something is up. The general consensus from the professional community seems to be that 1) ADHD is over-diagnosed, and 2) stimulant medications are over-prescribed **[Arria & DuPont, 2010]**. The first contention is a testament to the ambiguous and arbitrary nature of the diagnostic process. The guidelines put forth in the DSM-V are both broad and loose, and as a result it is easy for clinicians to bend the criteria to fit the wide variety of patients that come through their doors.

The case of the college student is particularly problematic. Young children are less conscious of their behavior and completely unaware of what it takes to be diagnosed with ADHD. College students, on the other hand, are much more conscious of their own behaviors and know very well what it takes to receive a

diagnosis. This makes the job of diagnosticians doubly challenging. On the one hand they must take into account that adolescent patients may unknowingly mask some of the underlying symptoms of ADHD, and on the other they must be wary of those patients that know exactly the behavior they need to exhibit to elicit a prescription. And when the parents of those students advocate for diagnosis and prescription, that only adds to the pressure. With so much ambiguity in the general criteria, it doesn't seem a stretch to assume that diagnosticians look to academic performance as the most functional indicator of the symptoms. Consider this mock diagnosis for an 18-year-old male patient:

> Does the student report struggling to concentrate? *Yes.*
>
> Does the student have trouble reading for extended periods of time? *Yes.*
>
> Is the student frustrated with his grades? *Yes.*
>
> How much time does the student spend studying? *Makes periodic attempts to seriously study but always gets frustrated and quits early.*
>
> Does the student think he is capable of more? *Yes, confidently.*
>
> Does the student appear and report being distressed? *Yes and Yes.*
>
> Do the student's parents give corroborating observations? *Yes, they say he has always been this way but they were reluctant to have him diagnosed, however they are now worried that his future may be in jeopardy and want him to receive help.*
>
> Do standard tests suggest the student has an attentional deficit? *Yes, they show his performance for attention-intensive tasks is below normal.*

This has the makings of an accurate diagnosis, but it is lacking two major features. The challenge becomes deciding how to interpret the more ambiguous criteria:

Does the student show symptoms of hyperactivity and impulsivity? *Possibly... however, people with ADHD often grow out of these types of symptoms as they mature into young adults since they are more noticeable and directly repressible.*

Does the student show multiple symptoms in multiple settings? *Maybe… however, people his age often learn to mask their symptoms in many settings, academic performance is often the only reliable indicator of functional deficit.*

Does the student qualify for another mental disorder that might better explain his symptoms? *The student and his parents are adamant that his attentional deficit is the ultimate source of his distress; any comorbid anxiety or depression could result from the academic struggles associated with ADHD.*

Should this student be diagnosed with ADHD? At this point it is hard to be sure. He definitely has trouble concentrating, but we aren't sure how broadly he experiences these symptoms. The conditions he may not fully meet are the most ambiguous, and there may be no way to know for sure whether they apply to him. It's also possible that his symptoms may actually be linked to another mental disorder, though it would require additional sessions and tests to be more certain, and even then it's still likely he best fits the ADHD criteria. His symptoms fit the description, there aren't any major red flags, and further testing is costly and will

likely still support the original hunch. These conditions are usually enough for many (if not most) clinicians to render an ADHD diagnosis, so we will follow suit with our mock student.

We have now decided that he does indeed have ADHD. Now we have to decide how to treat him. Luckily, our initial session provided us with some more pertinent information. His parents say that money is tight, meaning they would struggle to pay for additional regular sessions. He is enrolled with a full course-load at a university four hours away, making scheduling future sessions required for extended CBT very difficult. This information is almost certainly enough to discourage most clinicians from pursuing non-pharmaceutical approaches, so prescribed stimulant medication it is.

This example goes to show how difficult making an accurate ADHD diagnosis can be, especially with a college student. Could the student be exaggerating his struggles? Yes. Could the student just be a lazy bum that tricked his parents into helping him solicit an Adderall prescription? It is possible. Could the student in truth fall short of the criteria for diagnosis? Maybe so, but with so much ambiguity why risk not helping him at all? If he really does have ADHD then this prescription might drastically improve his life. If he doesn't really have ADHD, he might still derive some benefit from occasional stimulant use. Research suggests the medication is harmless enough at prescribed doses, so how bad could a close-but-false positive be? Better that than let him be a false negative and continue to suffer without treatment. All things considered, this appears to be the best course of

action for this patient. And it's not like this could negatively affect anyone else, right? [To be addressed in Chapter III]

Another major problem with the prescription of stimulant medications is that there is no way to quantifiably measure their efficacy. Given the three conditions that define an abnormal behavior or experience—1) deviates from societal norms, 2) is maladaptive, 3) causes subjective distress—the ultimate goal of any treatment method should be to relieve distress by returning the patient to a normal, adequate functional state. Stimulant medication therapy for ADHD is no exception. To evaluate this treatment method, we must first ask: Does it relieve distress? Decades of observation and ever-increasing prescription rates clearly suggest that patients are getting the results they want, so that seems to be a definitive yes.

Next we must ask: Is the therapy restoring patients to a normal level of functioning? Simply relieving distress does not guarantee normal functioning. For instance, alcohol can provide relief from distress associated with anxiety, but it certainly does not restore normal functioning. But how are we to define a "normal" level of mental functioning? With most medical conditions, it is clear what "normal" is—a blood pressure of approximately 120/80, a body temperature of 98°, a perfectly straight femur, etc. However, if someone suffering from ADHD experiences functional deficits, how are we to determine what degree of stimulant treatment restores him/her to that ideal "normal" level? If we define "normal" as the typical or average state of conditions for that person, then determining a "normal" level of functioning beyond baseline for an individual with ADHD is necessarily impossible.

In fact, one could argue that an inhibited functional level is "normal" for those with ADHD.

Ultimately, the measure of efficacy for these medications is not analysis of neurochemical balance or brain activity, but satisfactory academic performance. So how are we to determine what a satisfactory goal [acceptable "norm"] for treatment is for an individual in a given population when capacities for attention, memory, and general intelligence vary inherently from person to person? Are *As* normal? Certainly not. That's why they are prized. What about *Bs*, or *Cs*, or *Ds* ? The point is that there is no real medical standard for efficacy of stimulant medication therapy in college students outside of individual patient satisfaction with his/her academic performance. If a patient is still unhappy with his/her level of performance, then they are likely to receive an increased dosage. Once a patient is satisfied with his/her performance, there is no need to change the dosage. The medicine is clearly working. In this light, it appears that these stimulants don't simply *restore* the patient to a *normal* level of functioning, but rather *enhance* the patient to his/her *desired* level of functioning. If this is the case, then isn't it more accurate and honest to describe stimulant medication as enhancement therapy?

If this discussion of ADHD diagnosis and treatment has shown us anything, it is that the waters are murky… very murky. We see now that the criteria for diagnosis, as laid down in the DSM-V, are broad and very ambiguous. Though it is specific about which behavior characteristics may be indicative of ADHD, only a certain number are required to justify diagnosis. This allows for a wide variety of behavior combinations that supposedly qualify one as having ADHD. The DSM-V

also stipulates that these symptomatic behaviors must be present in at least two different settings, but it gives no indication of how many settings they may be absent from. Are two out of five settings really good enough for diagnosis? It also stipulates that these symptomatic behaviors must "interfere with, or reduce the quality of, social, school, or work functioning", implying that any one of these areas should be satisfactory **[DSM-V, 2013]**. With such ambiguous criteria, diagnosticians are forced to make very arbitrary judgments, and when in doubt they lean towards diagnosis. It's also clear that there is no real quantitative method for determining the efficacy of prescription stimulants. Clinicians are reliant upon the subjective impressions of their patients, and this makes the situation even murkier. It seems like a system ripe for mistakes on the part of the clinicians and for exploitation on the part of the patients. What could possibly go wrong?

CHAPTER III: THE VISIBLE ISSUE

So what's the problem with stimulant medications? Why should we care? The reality is that students certifiably diagnosed with ADHD are not the only ones using these medications to get schoolwork done. Numerous studies have shown that illicit stimulant use (i.e. use by people without stimulant prescriptions) is a very real issue on America's college campuses, and recent research has shown that those rates continue to grow every year **[Arria & DuPont, 2010; DeSantis et al., 2008; McCabe et al., 2005]**. Studies have estimated the number of non-prescribed college students who use stimulants to be anywhere from 17% to 34%, and that the vast majority of these use the medications for academic reason (e.g. reading, homework, and the ever-popular late-night cramming for exams) **[Arria & DuPont, 2010; DeSantis et al., 2008; Garnier et al., 2010]**. The key reasons for the widespread use of these medications are: 1) they are relatively easy to obtain, 2) their effects are perceived as being acute and temporary, and 3) they are widely reputed to be performance enhancers.

Research continues to show that stimulant medications are becoming increasingly easy to obtain. Studies have shown that between 55% and 82% of students, including stimulant users and non-users, believe that it is somewhat or very easy to obtain stimulant medication **[DeSantis et al., 2008; Sharp & Rosén, 2007]**. Between 68% and 91% of stimulant users reported that they obtained them

from peers (friends or significant others) with prescriptions **[DeSantis et al., 2008; McCabe et al., 2005]**. Other studies on stimulant distributors have shown that between 53% and 62% of students with stimulant prescriptions admit to having either sold or given away some of their supply to students without prescriptions **[DeSantis et al., 2013; Garnier et al., 2010]**.

A comprehensive review of the literature clearly shows three important things: 1) that the majority of stimulant prescription holders do not mind diverting their drugs to non-prescribed students, 2) that the majority of illicit stimulant users get their supply from peers with prescriptions, and 3) that the overwhelming majority of students, users and nonusers, prescribed and non-prescribed, believe that illicitly obtaining stimulant medications is fairly easy. If one feels the "need" to take stimulants in order to study, getting them is clearly not very hard.

Here are some informal examples to help illustrate the ease with which stimulants can be acquired. For contrast, if one asks the right guy where to get some marijuana, if he is in the know then he will likely give the name of a specific person who is purposefully known for distributing marijuana, and one generally has to ask around a bit before finally being referenced to such a person. Responses are generally along the lines of, "Yeah, _____ has been selling. I'll see if he has any," or the more secretive, "Yeah I know a guy. You want me to get you some?" However, with stimulant medications it is very different. Almost anyone one asks will know where to get a hold of some, and the tips are usually not as specific or secretive as might be expected. Responses are usually along the lines of, "Yeah I think _____ has a prescription. I'm sure he'll give you some," or the not-so-uncommon listing, "Yeah

I've bought from _____, _____, _____, and _____." The general impression one gets is that everyone with a prescription seems to be considered a potential amateur dealer, and the statistics suggest that such assumptions are correct more often than not.

One of the aspects of stimulant medications that make them so attractive is that their action is very acute. Once you take a pill, there is an onset period (usually 30 minutes) followed by a clear period of drug action (generally 4-5 hours) marked by increased attention and focus. Once that period of action ends, a brief "comedown" is experienced (generally 30-60 minutes) characterized by sluggishness, dampened mood, and in some cases mild anhedonia. Once the comedown is over, there are no perceived effects of the drug. Because the effects of stimulant medications are so acute and consistent, users have a high level of control over their experience. The onset and offset of the drug is clearly defined, and the duration is relatively brief. Therefore, stimulant medications can easily be taken on an "as needed" basis, unlike other common psychoactive medicines such as antidepressants and antipsychotics, which have to be taken daily on regular schedules to achieve their desired effects.

Research shows that, in general, people do not view stimulant medications as particularly harmful. This is likely due in part to the fact that they are prescription medicines. They are formulated and administered by virtue of their positive effects, and their responsible use is supported by an overwhelming majority of mental health professionals. Furthermore, these substances are relatively new, and there has not been enough time to observe any possible long-term effects of their use. In

one study, 70% of students who had illicitly used stimulant medications before perceived slight or no risk, physical or otherwise, associated with illicit stimulant use **[Arria et al., 2008]**. Out of all the students surveyed about illicit stimulant use (including illicit users and non-users), 4% perceived no risk, 22% perceived slight risk, 42.2% perceived moderate risk, 25.2% perceived great risk, and 6.6% "couldn't say" **[Arria et al., 2008]**. Only one in four students perceived a great risk for illicit stimulant use. This demonstrates the general sentiment that college students have about illicit stimulant use, and the greater conversation doesn't seem to indicate that anyone is really that worried about the growing illicit use of stimulants on college campuses.

In a U.S. News health report, Dr. Brian Doyle, a clinical professor of psychiatry at Georgetown University Medical Center, responded this way when asked if there is a trend of stimulant abuse among college students: "It's like the psychological equivalent of using steroids to enhance physical performance. These students seem to be doing it with relative impunity, and it doesn't seem to be causing too much trouble since most use the drugs not to get high but to function better. So when exams are over, they go back to normal and stop abusing the drugs" **[Shulman, 2008]**. This position seems to be the feeling of most people on this issue. It implies that there are no serious health risks associated with occasional use of stimulant medications for academic reasons during college, and there even seems to be a tacit acceptance of the practice as if it's no big deal.

When looking at the research as a whole, it seems clear that the majority of people aren't too worried about the illicit use of stimulant medications, particularly

for academic reasons. Students on average show only mild concern about potential health risks, and the data suggests that once you try stimulants, your concern about them decreases significantly. If the general sentiment continues to be one of nonchalance and tacit acceptance, then it is doubtless that, as more and more students give stimulants a try, their popularity on college campuses will continue to grow.

These stimulant drugs have gained a widespread reputation as performance enhancers—"steroids for your brain" as one student put it—and the demand for them by the non-prescribed continues to rise. The reality is that, in general, students are able to get more work done in a shorter amount of time with the aid of stimulant medication, regardless of whether they qualify for an ADHD diagnosis. This has two potentially attractive consequences: 1) students are able to make better, more efficient use of their study time and ultimately perform better in their coursework, leading to better grades, and 2) students can more easily maintain a reasonable level of academic performance while still regularly participating in popular extracurricular activities stereotypical of the college experience (e.g. partying, substance abuse). Whether they are used to get an academic leg up, to support other extracurricular habits, or some combination of the two can vary from person to person. This variety of enticements is a valuable explanation for the rapid rise in stimulant medication popularity.

Some researchers have argued that these drugs really don't work for most non-ADHD students. They argue that the scientific data shows that non-prescribed stimulant users "typically" have lower grade point averages than non-users, and that

therefore non-prescribed use doesn't seem to be academically beneficial **[Arria et al., 2008; McCabe et al., 2005]**. However, does this statistic truly suggest this? Survey research has shown that academic stress is the most common reason for illicit stimulant use **[Arria et al., 2008; DeSantis et al., 2008; Sharp & Rosén, 2007]**. Academic stress can comprise several factors, most commonly dissatisfaction with grades and heavy workload. Students at every performance level experience these academic stressors, but the intensity at which they are experienced almost surely increases as performance level decreases. If we control for academic motivation, then a student with a lower GPA will likely feel more pressured by his course load and unhappier with his grades.

When this level of academic stress becomes debilitating, it might be more accurately described as "academic desperation". Desperation is a powerful motivator, and it seems that those who feel academically desperate would be more likely to turn to stimulant medications for help. Using these medications can only ever lead to a fractional increase in performance (albeit that any increase is often considered significant), and if academically desperate students with poor GPAs use these stimulants, we should still expect them to yield relatively low GPAs. Remember that letter grades are not perceived the same way by all students. A student with a 2.5 GPA will be much happier with a B- than a student with a 3.8 GPA. The only parameter of consequence is whether the illicit stimulant user is pleased with the effect these drugs have on his performance. If he is pleased with the improvements to his grades, then the drugs have worked for him. This is no

different from the way clinicians infer stimulant efficacy in their ADHD patients (discussed in Chapter II).

Students with higher GPAs to begin with are much less likely to experience academic desperation, and therefore are less likely to turn to stimulant medications for aid. This is not to say, however, that "smart" people never use these drugs. Many reports from the professional world suggest that overachievers are some of the most likely people to seek out stimulant medications. Dr. Gagy Cora, a psychiatrist from Florida, describes her stimulant prescribed patients: "They are extremely smart and very successful. We're not talking about someone struggling to perform," **[Szalavitz, 2009]**. The reality seems to be that baseline performance is irrelevant to the effectiveness of stimulants. In fact, several studies have shown that therapeutic doses of stimulant medications lead to noticeable improvements in attentiveness, working memory, and task saliency (motivation to perform a task) in normal adult volunteers **[Devous et al., 2001; Ilieva et al., 2015]**. Why do students in distress seek out and use these drugs illicitly? Because they work! Simple reason would suggest as much. If they didn't work, then it is unlikely that they would see such rapid and continuous growth in popularity.

The theory that academic distress is a primary motivator for illicit stimulus use by college students seems intuitive, and it fits well with what the data show—that illicit stimulant users on average have lower GPAs that non-users and that they report feeling stressed and overwhelmed by their academic workloads. This is probably the case with a large portion of illicit users, however there are many who do not fall in this category. The main issue that I think this explanation fails to

address is the competitive nature of collegiate academia. For many students, college is essentially a four-round qualifier for their professional careers. Those with a graduate education in their sights are competing against each other for higher grades, awards, and extracurricular opportunities to boost their résumés. In this very Darwinian environment, it's "survival of the fittest". Ideally, "the fittest" should be the more talented and disciplined students, and this is certainly true most of the time. But what happens when you throw a few bright students with ADHD diagnoses and stimulant prescriptions into the mix?

Students with stimulant prescriptions take them to remain attentive during lectures and to focus when preparing for exams. They are able to focus so well when on stimulants that they can study for many hours at a time while still remaining efficient, allowing them to condense their studying into fewer, lengthier sessions (a.k.a. cramming). As a result they are able to outperform even some of their more diligent fellow students, while still having plenty of free time to waste. This really doesn't seem just. How can it be? Only students diagnosed with ADHD are able to legally obtain these prescribed stimulant medications and use them to achieve what they individually deem to be a satisfactory level of performance, while the other "normal" students are all expected to achieve without. Simply put, one loosely defined group is given access to performance-enhancing drugs, and those that fall outside that group are denied. What sort of response is this scenario likely to encourage? Under the current parameters, controversy is surely inevitable. Consider this simplified hypothetical:

Student *X* is "normal".

Student *Y* is diagnosed with ADHD.

On his own, *X* achieves a 3.2 GPA.

On his own, *Y* is only capable of achieving a 2.5 GPA, clearly less than *X*.

However, since he is prescribed to a stimulant, *Y* is able to achieve a 3.5 GPA.

If *X* had access to a stimulant, he could have achieved a 3.8 GPA.

It is clear that *Y* ultimately out-performs *X* because of the stimulant boost.

This example seems to strike everyone as just plain wrong, however it is a realistic scenario under the current convention. Though the intent of these stimulant prescriptions is to facilitate an adequate, satisfactory level of performance, this often means providing these students with a very real competitive edge. The not-so-surprising consequence is that undiagnosed, non-prescribed students seek out and use these drugs illicitly to maintain their own competitiveness. And can we blame them? When others are given an unfair advantage, how else can we expect them to respond, given that the competitive consequences for them are so immediate?

This is the "arms race" that we see all around us today. In the past decade, illicit abuse of these medications on college campuses has skyrocketed. Studies have shown that between 15% and 30% of college students use stimulant medications illicitly (without a prescription), and more than 50% of college students with prescriptions divert at least part of their supply to non-prescribed students **[Garnier et al., 2010]**. This fast-growing "study-drug" culture is eerily similar to the anabolic steroid controversy that plagued professional sports for decades, and it

has done much to accelerate the negative shift in public sentiment toward stimulant medication.

The problem is here, and it is real. Though it is hard to make many definitive statements about the illicit use of stimulant medications on college campuses with the research that has been done thus far, there are a few things that are very clear. Illicit stimulant use on college campuses is common, and it's on the rise. It has become increasingly easy to acquire stimulant medications on college campuses, usually from peers with prescriptions. There is a wide impression among college students that stimulant medications are performance enhancers and that they are relatively safe. Students use them illicitly for a variety of reasons, but mostly for academic purposes—either to help themselves stay afloat or to remain competitive when others use them.

This, however, is only the visible issue. Illicit use of stimulant medications on college campuses is becoming increasingly common, and this has prompted the obvious questions: Should we buckle down to prevent illicit stimulant use, and if so how? It seems as if there is no clear answer to this question. This dilemma, I believe, is what points us to the deeper issue. It is to this issue that I devote the next chapter.

CHAPTER IV: THE DEEPER ISSUE

In Chapter I, I explained the effects that prescription stimulants have on the brain. By increasing dopamine transmission in the brain centers responsible for reward processing, i.e. the mesocorticolimbic pathway, these drugs increase motivation for engaging in certain behaviors, which leads to increased attention and memory performance. I also explained the predominant theory that ADHD is an issue of chemical imbalance; specifically, people with ADHD suffer from consistently low dopamine activity in the brain's reward/motivation centers, inhibiting their ability focus and retain information. This is the reason, according to the predominant theory, why stimulant medications are apt for treating ADHD. People with ADHD lack dopamine, and stimulant medications provide the dopamine.

It should be noted, however, that this biochemical explanation for ADHD only exists because of the efficacy stimulants have demonstrated in relieving the relevant symptoms. Researchers did not discover that patients with ADHD had lower dopamine levels and then specifically design a drug to increase those dopamine levels (even with our current technology, such research would be intensive and difficult to conduct from an ethical perspective). In fact, the process was exactly the opposite.

It was long observed that stimulants like amphetamine had noticeable physical and mental effects. While most researchers during the 1940s were initially

interested in their potential for physical performance-enhancement (World War II was all that mattered at the time), it was quickly observed that people taking stimulants experienced increased focus and attentional motivation **[Rasmussen, 2011]**. During the 1950s and 1960s, the golden age of psychiatry, clinical researchers began intuitively administering these drugs to patients who exhibited attention deficits, and the results were exactly what they expected. Decades later, animal researchers determined that these stimulants worked by increasing dopamine activity in the brain's reward centers **[Sulzer et al., 2005]**. Because they had such positive effects on people with ADHD, it was inferred that dopamine deficiency was the cause of ADHD.

To be clear, we do not know for sure what the cause of ADHD is. We only know what we can infer from the responses of ADHD people to stimulant medications. This makes the biochemical model a soft one. According to this model, ADHD is a state of insufficient dopamine transmission in the mesocorticolimbic reward pathway. Of course there are those who have excessive dopamine transmission in these areas, which could manifest as psychotic symptoms. Then there are those in the "normal" range, i.e. those who have just enough dopamine transmission. And certainly there are those who exist closer to the fringes of this "normal" range, i.e. those who barely have enough and those who almost have too much. Indeed, we must assume, if the biochemical model for ADHD is correct, that there exists a complete spectrum of dopamine activity levels and that people exist at levels all along that spectrum. In light of this, there is one very obvious question: What is the threshold of dopamine activity that qualifies as ADHD? How can you

differentiate someone that is just below this threshold from someone who is just above it? If ADHD is truly a specific, diagnosable disorder, then there should be a way to clearly differentiate between the just barely and almost ADHD people. Ideally, the medicine could be the test.

Here is an experimental model we could use. We collect a group of participants that we, through psychological evaluation, have determined are fringe candidates for ADHD. We have each participant write a five-page essay on a given topic, and we observe each of them as they write. We then ask them to report how they felt while completing the assignment. The next day we give each of the participants a standard dose of Adderall (approximately 20mg) and have them write another five-page essay on a comparable, but different, topic. We observe them as they write and ask them to report how they felt while completing the assignment while on Adderall. Our naïve hypothesis is that those who truly suffer from ADHD will perform better on Adderall and report feeling more attentive and motivated, and those who do not truly suffer from ADHD will not show or feel much improvement in their performance. If such a result were attainable, then it would validate ADHD as a disorder and Adderall as an effective medication.

Of course, this is not what we would see. The results of this experiment would be completely null. All of the participants would show increased performance efficiency, and all would likely report feeling more attentive and motivated to complete the task. Indeed, it is impossible to confidently draw any line for ADHD qualification. Ultimately, we can't ever really know who has it and who doesn't. If someone reports feeling as if they have ADHD and seems to fit within the

broad personality grouping related to ADHD, then we can only assume that he has ADHD. That is, assuming that ADHD is a valid diagnosis. Many argue that it is not, and others even go so far as to call it fictitious **[Schonwald & Lechner, 2006]**. The kicker here is that these diagnosed people are given prescriptions for stimulant medications to alleviate their symptoms—medications that we can now clearly see provide the same effect to virtually everyone. With this level of uncertainty due to the subjective criteria for diagnosis, what is to stop people from faking the right symptoms in order to acquire a stimulant prescription? This, along with benevolent over-prescription, could help account for the dramatic rise in the incidence of ADHD over the past few decades.

This seems to have been the trend with Major League Baseball. In 2009, the year that MLB officially banned stimulants due to their performance-enhancing effects, 28 players had medically certified exemptions, meaning they were diagnosed with ADHD. One year later, in 2010, the number of players with exemptions had climbed to 103, about 8% of all MLB players **[Saletan, 2009]**. In one year, the number of MLB players diagnosed as ADHD quadrupled. Why did this happen? Is it really believable that 75 players suddenly realized they had attention problems and were accurately diagnosed with ADHD, all in one year? Or is it more reasonable to assume that these players sought out diagnoses in order to get around the ban and use stimulants to boost their performance? I find the latter much more sensible. And if baseball players can seek out diagnoses to get prescribed stimulants, why not college students?

Given their history of widespread use in numerous settings (professional, academic, athletic, and military) and judging by the universality of their effects, it's hard to see these drugs as anything other than enhancement therapy. And is a scantly supported diagnosis of ADHD really enough to warrant giving a person performance-enhancing drugs that are denied to the rest of the non-prescribed public? If we are going to buckle down on illicit stimulant use, it seems only fair that we buckle down equally on this deeper issue and openly address the question of ADHD legitimacy.

Based on my analysis thus far, I find there to be little compelling evidence that ADHD is a clearly definable condition, and even less to support that ADHD warrants exclusive prescriptions to performance-enhancing stimulants. That being said, I do not deny that there are surely people out there who suffer on the lower end of the dopamine activity spectrum. They probably do in fact qualify to be diagnosed with ADHD. But where does the line for qualification end? Who really knows? It is for these reasons that I believe ADHD, as currently defined and diagnosed by the DSM-V, is an inherently flawed label, and that any disproportionate allotment of medical advantages tied to this label should be reevaluated. The question now becomes: What do we do about it? How should our understanding of ADHD and stimulant medications influence how we regulate these substances? In the next few chapters I will discuss potential solutions to this problem and project potential consequences for each method.

CHAPTER V: THE CASE FOR PROHIBITION

As I have shown, it is essentially impossible in the vast majority of cases to determine who, if anyone, truly qualifies as having ADHD. Those with ADHD are almost always treated using stimulant medications, and it is therefore unavoidable under the current paradigm that many people who do not truly need them are being granted access to them. Stimulants have an undeniable performance enhancing effect on virtually all who use them, so their disproportionate dissemination naturally creates an enhancement disparity. In a competitive arena such as collegiate academics where everyone is fighting to keep up, this leads to widespread illicit stimulant use.

This alarming development has prompted new conversation about the issue of stimulant medications and ADHD in general. Many are calling ADHD a fictitious diagnosis and stimulant medications a threat to the integrity of education. From this platform, I will discuss the case for across-the-board restriction of stimulant medications.

To address the issue of illicit stimulant use, we must first identify the root of the problem. This was the subject of the previous chapter, in which I revealed that the deeper issue is the widespread prescription of stimulant medications. This excessive prescribing, an unavoidable part of the current paradigm, created a door through which stimulants could enter the college world. Virtually all studies

confirm that the most common sources of illicit stimulants are peers with prescriptions **[Arria & DuPont, 2010; DeSantis et al., 2013; McCabe et al., 2005]**. If the goal is to eliminate illicit stimulant use on college campuses, then the most efficient line of action would be to eliminate the source of these stimulants. By prohibiting the prescribing of stimulants to treat ADHD, the source of these drugs would be effectively cut off. With no prescribed peers from whom to acquire the drugs, illicit users would have nowhere to turn.

Some may argue that, if prescriptions are cut off, the illicit users will simply turn to covert, non-licensed stimulant manufacturers. This black market theory is plausible, but I find it unlikely. The sharp rise in illicit stimulant use on college campuses has closely accompanied the rise in the frequency of stimulant prescriptions for college students. As the supply has increased, so has the demand. Though it is doubtful that the elimination of prescription stimulants will immediately eradicate the illicit demand for them, it seems likely that such demand will progressively fall. The vast majority of students, over 85%, report illicitly using these drugs for academic reasons, and they likely feel justified by the presence of the noticeable group of students who have legitimate access to them—an "if they can, why can't I" mentality **[Arria & DuPont, 2010; DeSantis et al., 2013]**. With no one being granted access to these performance-enhancers, students should no longer feel the need to use stimulants illicitly in order to keep up.

There might also be additional benefits to this sort of prohibitory action. With prescription stimulants eliminated, mental health professionals would be forced to explore other treatment options for those who struggle with attention and

motivation. Cognitive-behavioral therapy (CBT) and meditation are two methods that have both been shown to attenuate the symptoms described by ADHD. In fact, in numerous studies, CBT has demonstrated symptom relief efficacy equal to stimulant medication **[Lyons & Martin, 2011]**. With such promising evidence already in publication, it is not unreasonable to hope that necessity will drive doctors and researchers to affirm and refine these alternative treatment techniques, filling the therapeutic gap left by prohibited stimulant medications.

However, when discussing potential decisions one must also consider any potentially negative consequences. Because this prohibitory approach is designed to lean on the "safer" side, the negative consequences are not readily apparent. However, there is one issue that could be of serious concern. What if, for a select group of students, stimulant medication is the only treatment method that effectively relieves their ADHD symptoms? It could be possible that, even though other non-pharmaceutical methods have proven equally effective for most patients, there are still a select few who only respond meaningfully to stimulant medication. If this were the case, it would not be justifiable to deny these individuals the treatment they need.

This could be a slippery slope for this policy, however. If you must allow prescriptions for those who truly need them, then you once again have to establish the line that defines legitimate need. Though this might be theoretically possible if patients are forced to undergo extensive trials for every other treatment option with no signs of improvement before being referred to stimulant medication, such testing would be expensive, time-consuming, and ultimately unrealistic. More likely, the

line would slowly begin the regress again toward the mean, allowing for more and more students to acquire stimulant prescriptions, and we might end up no better off than when we started.

But what else could we do? We have examined the possibility of allowing no one access to prescription stimulants, and it seems like this might lead to even more controversy down the line. This being the case, perhaps we should consider a more liberal option.

CHAPTER VI: THE CASE FOR ENHANCEMENT

Stimulant medications create a very tricky situation. Given the failure of the current regulatory policies, it seems that this sort of issue lends itself to an "all-or-none" type of thinking. That is, either no one should have access to stimulants or everyone should. In the last chapter I discussed the pros and cons of a prohibitory, or "none", approach. Though this method does address certain issues, it seemed to create others. When all things are considered, the two key problems appear to be: 1) some people truly require stimulant medications to function properly and many others find them therapeutic and beneficial, and 2) prescription stimulants, in many cases, can provide an unfair competitive academic edge for the user over other non-prescribed people. The prohibitory approach directly addresses the second problem, but ultimately it seems to exacerbate the first one. So what if we approach this from the opposite angle? If "none" doesn't do the trick, maybe "all" will.

Back pain is a sort of general ailment, meaning that there is a grouping of symptoms that, when experienced by a patient, are labeled as "back pain". In most cases, there is no standard cure for back pain. Rather, patients are generally prescribed to a type of opiate therapy to treat their symptoms. Virtually anyone experiencing the appropriate symptoms for "back pain" is eligible for opiate therapy, barring some ulterior health concerns. The important thing to notice here is that in many, if not most, cases, people are not diagnosed with a specific, curable

disorder as the source of their back pain. Rather, most people are simply diagnosed as suffering from symptomatic "back pain" and are given the drugs necessary to curb their symptoms. Opiate therapy is viewed as a method of symptom relief, not a cure for a specific disorder, and therefore it is much easier for the average person to acquire. Are opiates addictive? Absolutely. Are they commonly abused? Of course. Are they potentially harmful? If abused, certainly. However, there are many people out there who can only find relief from their symptomatic pain by taking prescription opiates, and this has been reason enough to keep these potentially dangerous drugs readily available to the public.

Now imagine a world where stimulant medications are regarded in the same manner as opiate medications. In this world, the clinical label "ADHD" has been abandoned by the psychiatric community, and the group of symptoms that once added up to ADHD are now viewed as a general ailment rather than a specific diagnosable disorder. In this world, almost anyone who experiences distress by "attention deficit" is eligible for stimulant therapy, the same way that almost anyone distressed by "back pain" is eligible for opiate therapy. People who feel that they struggle to focus and experience distress as a result of this struggle need only visit a doctor. If the doctor is convinced that a patient's symptoms and distress are genuine, then that patient is immediately eligible for stimulant therapy.

This scenario may seem radical and farfetched at first, but in reality it is little more than a stretch from our current way of thinking about stimulant medications. Under the present paradigm, patients must meet the criteria necessary for an ADHD diagnosis is order to be granted access to prescription stimulants. This has led to

controversy because ADHD, though inherently ambiguous, is regarded as a specific disorder, and stimulant medications, though ubiquitous in their effects, are seen as a "cure" for ADHD. But what if the paradigm changed? If we view "attention deficit" as a general sort of ailment whose symptoms come and go with different settings and external pressures, it instantly becomes a more acceptable and relatable condition. Surely most of us have experienced times when we struggled to focus on certain tasks. What if even occasional attentional struggles warranted access to stimulant therapy? One doesn't need to suffer from constant, uninterrupted "back pain" in order to receive opiate medication. Occasional pain flare-ups are enough to warrant a prescription to be taken "as needed". Similarly, perhaps one shouldn't need to suffer from constant, uninterrupted "attention deficit" in order to receive stimulant medication. Perhaps intermittent struggles with focus should be enough to warrant an "as needed" prescription.

At the root of all this, there is a case to be made for individual autonomy when it comes to therapeutic substance use. Ronald Bailey makes this case in his article, "The Battle for Your Brain" **[Bailey, 2003]**. Pointing to the examples of Prozac (an antidepressant) and Ritalin (a stimulant), he asserts that drugs like these provide real therapeutic benefits to many people, and that those people should be entitled to access to these drugs if they choose to use them **[Bailey, 2003]**. In his view, broad concerns about the societal impact of increased neuro-pharmaceutical therapy are not grounds enough to deprive individual people of treatments that they perceive as beneficial **[Bailey, 2003]**. This is a very liberal perspective concerned with the individual's right to self-determination. Within the scope of

medicine, the principle of Autonomy maintains that every individual is entitled to accept or reject whatever treatment is offered them, and the principle of Beneficence maintains that doctors are obligated to reduce suffering and promote wellbeing by whatever means necessary **[Beauchamp & Childress, 2009]**.

This means that if a patient suffers from "back pain", the doctor is responsible for providing the possible treatment options and helping the patient make an informed decision. If the doctor believes that surgery might provide a more permanent solution, but the patient refuses the operation, the doctor must respect the patient's autonomous decision and is benevolently obligated to provide the medication necessary to relieve the patient's painful symptoms. Conversely, if the doctor believes that opiate medication is the most effective way to control the pain, but the patient is unwilling to take the drugs, the doctor must respect the patient's choice and must offer other treatment options if they are available. Similarly, if a patient suffers from "attention deficit", the doctor is obligated to relieve these symptoms. If the doctor believes that CBT is the ideal treatment method, but the patient refuses and opts for stimulant medication, the doctor should be obligated to respect the patient's autonomous decision. If an individual experiences a therapeutic benefit (i.e. increased attention/focus and decreased subjective distress) by taking stimulant medications, who are we to refuse this individual's right to autonomy and beneficence?

Bailey advocates for the individual's right to enhancement. That is, he believes that everyone should have the right to take performance-enhancing drugs if they believe it is in their best interests **[Bailey, 2003]**. The system under which this

sort of prescription distribution might occur is simple. If you are dissatisfied with your current attentional performance and want to experience the benefits of stimulant medications, you simply visit your local doctor. You explain to the doctor that you are dissatisfied with your current attentional performance and want to try stimulant therapy. The doctor explains the potential risks that accompany stimulant use and screens you for any conditions that might put you at increased risk with stimulant use. After discussing the appropriate information with your doctor, if you still think you could benefit from stimulant use then you should be eligible for a prescription. Under this paradigm, anyone who derives therapeutic benefit from stimulants without significant risk of harmful side effects is granted access to them.

Of course there should be measures taken to discourage and hopefully prevent stimulant drug abuse, however the potential for such abuse is not sufficient to justify excessive restriction of these substances. Our society is riddled with examples of autonomy prioritized. Tobacco use commonly leads to emphysema, lung cancer, and heart disease and is highly addictive, yet we allow anyone age eighteen or older to buy it from the nearest gas station. Alcohol is destructive to the heart, kidneys, and pancreas and has a high potential for abuse, yet it is readily and legally available to anyone age twenty-one or older. When it comes to these clearly dangerous substances, we defer to the individual's personal judgment; ergo, you can consume as much of these drugs as you want as often as you want as long as you don't interfere negatively with the lives of others. If we respect autonomous choice when it comes to these crude, destructive substances, why should our approach to refined, effective substances be any different?

When it comes to neurological enhancement technologies like stimulant medications, there are several complaints that are commonly submitted. Bailey identifies many of these, and I will comment in order on the three that I find most relevant and important; namely that neurological enhancements 1) undermine good character and personal responsibility, 2) erode authenticity and promote "dubious norms", and 3) are either anti-egalitarian of self-defeating.

The claim that it is immoral and irresponsible to use stimulant medications for their enhancing effects seems unfounded to me. There seems to be an underlying stoicism in the way we approach academic and professional life. Society tells us that the acceptable way to overcome challenges in life is to struggle hard with oneself, to work with others, and to endure necessary pain and sacrifice. This tough love mentality implies that there is some ideal virtue to "succeeding on your own steam", and that using any artificial or external agents to increase one's own performance is somehow dishonorable. I find this sort of thinking to be shortsighted and, in a sense, hypocritical.

We humans are constantly striving for new ways to enhance performance and increase efficiency—from the wheel to the microwave—and we make no exception for our bodies. Coffee is an excellent example of a ubiquitous performance enhancer. Caffeine is the most widely used stimulant substance on the planet, and, like other more potent stimulants, it promotes alertness and focus by increasing dopamine activity in the mesolimbic reward pathway **[Nehlig et al., 1992]**. While most of us simply use caffeine via coffee to enhance our general alertness throughout the day, many use it in higher quantity to boost cognitive

performance. However, I don't hear anyone decrying the use of caffeine via coffee as a study aid (except for the Mormons of course, who, to avoid the evils of coffee, adopted a Native American tea containing ephedrine, a naturally occurring stimulant structurally analogous to methamphetamine). We have unquestioningly accepted this practice, even though it is clearly a form of performance enhancement, albeit mild. It seems that it is the strength and efficiency of stimulant medications that set them apart from other stimulants like caffeine; but can we really draw a moral distinction here based solely on the strength of the shared effects? It just doesn't seem logical.

I also believe that characterizing prescription stimulant use as irresponsible is shortsighted. Certainly we would all agree that the reckless use of stimulants for recreational purposes is irresponsible, however this is not the sort of stimulant-related behavior that we are discussing. For people seeking to maximize cognitive performance, especially those who struggle with attention and focus, it seems that using stimulants in controlled doses is in fact the responsible thing to do. Struggles demand solutions, and if an individual struggles with attention, the responsible think to do is to resolve that struggle, even if the solution comes in the form of stimulant medications.

There are those who suggest that stimulant use degrades authenticity and promotes normative behavior **[Arria & DuPont, 2010]**. This argument seems to imply that allowing external forces to influence your mind makes one's behavior inauthentic. Is it possible, then, for anyone to be truly authentic? Stimulant medications can augment one's capacity for attention and focus, however they

cannot implant ideas. They can impact one's personality and patterns of behavior, but so can just about anything. Enhancing performance and/or altering behavior have no bearing on authenticity. As Bailey proposes, consider a religious convert. If a man undergoes a dramatic religious conversion such that his personality and behavioral patterns are changed, does this make him inauthentic? Surely not.

Perhaps the loudest argument against neurological enhancement technologies is that they are anti-egalitarian or self-defeating. The idea here is that certain people will have greater access to stimulant medications than others, and that it is therefore unfair to allow those with access to benefit while those without access cannot benefit. This argument is weak at best. Should we also bar parents with substantial means from sending their children to exclusive universities because many others cannot afford to? Of course not. Besides, the monetary costs for stimulant medications are unlikely to result in such drastic disparities. If anything, widespread access to stimulants could result in increased social equality.

Then there are those who suggest that egalitarian distribution of stimulant medications, once achieved, would defeat the purpose of having them in the first place. The argument is that since certain people use these drugs to level the functional playing fields, granting everyone access to these substances would negate that leveling effect. However, there is no real reason to think that this would happen. The vast majority of people who use stimulants now do so because they experience some personal benefit. They are better able to meet their own performance expectations. They are better able to focus their minds and block out the constant barrage of cognitive distractions. If the restrictive controls on these

substances are relaxed, it seems intuitive that the people who seek them out will still be doing so for reasons of personal benefit. Those people who see no personal benefit from using stimulants will still be unlikely to use them. The egalitarian ideal is that everyone should have the same opportunity to use stimulants responsibly, so as long as all those who experience benefit from stimulants are granted reasonable access to them, then an egalitarian system has been achieved.

Ultimately, the case for enhancement stems from a liberal perspective on society. If people experience genuine personal benefits from using stimulant medications to enhance their ability to perform, and they knowingly and willingly accept the potential risks associated with stimulant use, then who are we to tell them that they can't use them?

CHAPTER VII: THE PRINCIPLED APPROACH

As evidenced by the persistent and growing debate surrounding the legitimacy of stimulant medications and their distribution, making definitive ethical decisions about these issues is not easy. Thus far we have described the current state of affairs and discussed two different approaches to improving the situation. The two alternative solutions are inherently polarized, and this seems to appeal to the polarized nature of our political system. Look for people supporting increased regulation and prohibition of mind-altering drugs, and you will likely find them in the conservative political camp. Look for people supporting decreased regulation and increased availability of mind-altering drugs, and you will likely find them in the progressive political camp. However, this discussion is more than a political issue—it's a personal health issue. This being the case, it seems silly to allow political affiliations to dictate how we reach our conclusions. When the well-being of others is at issue, the only acceptable way to make decisions is a systematic ethical approach.

The method that I find most apt for addressing these sorts of bioethical issues is Principlism. This ethical system is concerned with four key, distinct principles: 1) *Autonomy*, the obligation to respect the individual's right to self-determination, 2) *Beneficence*, the obligation to relieve suffering and improve the peoples lives, 3) *Nonmaleficence*, the obligation to do no harm, and 4) *Justice*, the

obligation to promote fairness and equality, especially regarding the distribution of benefits and burdens **[Beauchamp & Childress, 2009]**. Each of these principles carries inherent moral weight, and the goal of any decision-making process should be to weigh and balance these principles in the most equitable way possible. This means assessing the situation according to each principle and identifying the best way to reconcile each principled position with the others **[Beauchamp & Childress, 2009]**. Ultimately, a moral harmony is struck whereby all four principles are respected and reconciled appropriately.

Autonomy is perhaps the most prioritized factor in Principlist ethics, and for this reason we will discuss it first. When an individual's personal health is at stake, the need for self-determination is paramount. In every scenario, it is the patient's body and life on the line. Each individual experiences life uniquely, and only the patient is subjectively aware of his pain and distress and the extent to which it is relieved. Additionally, the patient is the one who is treated, and it is he who must endure the consequences of said treatment. What this means, first and foremost, is that no patient should be treated against his will. This is the one standard that is completely non-negotiable. Secondarily, this means that the patient should be, within reason, allowed to select the form of treatment he receives. After all, it is the patient who must live with the consequences of the treatment. If a patient reports struggling to focus and, after being thoroughly informed of his options, believes that stimulant medication is the best choice for him, that is his right as a sovereign individual. A patient should not be denied access to a potentially beneficial

substance unless it is clear that the substance could have serious negative effects on the individual.

Beneficence is the most intuitive principle. It should be the goal of all healthcare providers to relieve suffering and improve quality of life in everyone they treat. If a patient says that he struggles consistently to focus on important tasks and is clearly experiencing distress, it is the duty of the doctor to combat his symptoms and relieve his distress. No individual should be prohibited from improving his quality of life, even in the improvement seems superficial or unnecessary to some. This extends to all those who feel the negative effects of attentional deficit and find relief with stimulant medication. Though treatment for ADHD symptoms comes in many forms—stimulant medication, CBT, meditation—no matter what, the doctor must do his utmost for the benefit of the patient. This means doing the most good for the patient while respecting the patient's autonomy. If a patient wants to try stimulant medications, the doctor must consider the pros and cons of stimulant treatment for that patient. If the doctor concludes, in spite of the potential risks and side effects, that stimulant treatment could improve the patient's condition, then he is obligated by the principles of Beneficence and Autonomy to provide the stimulant treatment to that patient.

Nonmaleficence is the big no-no of Principlism, and in a way it is the mirror image of Beneficence. Just as doctors should seek to do the most good, so also should they seek to do the least harm. This principle is probably the least relevant to our discussion of prescription stimulants, however it does have its place. Consider, for instance, a patient with a history of heart trouble and drug addiction

who presents with attention deficit symptoms and wants to try stimulant medications. A judicious doctor will consider the risk factors for stimulant treatment along with the patient's medical history in order to weigh the potential good against the potential harm. Stimulant medications can cause increased blood pressure, increased heart rate, and general coronary distress, and this patient has a history of heart trouble. Additionally, stimulant medications have potential for abuse, and this patient has a history of drug addiction. Given these circumstances, it is clear that prescribing stimulants to this patient poses considerable risk. They could exacerbate his addictive tendencies and possibly cause his heart to fail. With such high potential for harm, it would be horribly negligent to prescribe stimulants to this patient. Nonmaleficence, in this case, obligates the doctor not to prescribe, and to instead pursue safer alternatives to stimulant medications.

Justice is the principle that focuses more on the population than the individual, as it demands that all individuals should have equal access to healthcare. More specifically, it dictates that benefits and burdens be equitably distributed to all. When it comes to stimulant medications, this principle comes into play when we consider how to determine who should have them and who shouldn't. Under the current paradigm, the line separating those who need stimulant medications and those who do not is ambiguous at best, and it can be nearly impossible to determine who truly "needs" stimulant treatment. This has created a scenario where many people who might not meet the full qualifications for ADHD are denied access to stimulants, while others who may not even be noticeably different are granted prescriptions. This problematic system has created an unjust distribution of

stimulant medications, leading inevitably to the controversial rise of illicit stimulant use that we have been discussing. Perhaps, rather than determining who needs stimulant treatment, doctors should focus on determining who could benefit from it. If this becomes the standard, perhaps more people will be helped, and perhaps the underground redistribution of benefits will dissipate into obsolescence.

Now that we have discussed the role of each principle in the subject at hand, we can combine them to hopefully reach a defensible conclusion. Beneficence dictates that anyone whose quality of life can be increased by stimulant treatment should be able to get it, and Nonmaleficence dictates that anyone whose quality of life will be decreased by stimulant treatment should not be given it. Autonomy dictates that each individual has the right to self-determination, however this self-determination is restricted to the bounds of Beneficence and Nonmaleficence. This interplay of principles has three important implications: (1) an individual who wants to undergo stimulant treatment and stands to benefit from it despite the risks should receive stimulant treatment; (2) an individual who wants to undergo stimulant treatment but is at considerable risk for adverse affects should not receive stimulant treatment; (3) an individual who does not want to undergo stimulant treatment should not be made to do so for any reason. Finally, Justice dictates that all people should have equal opportunity for stimulant treatment—that all who might benefit should have the chance to choose for themselves.

Now that the Principlist stance on stimulant treatment has been defined, we can compare it to the approaches we've discussed. The idea of prohibiting stimulant treatment across the board is clearly not compatible with Principlism, however it

does satisfy the criteria for Nonmaleficence and Justice. If they are completely eliminated, stimulant medications cannot do harm to anyone, and, paradoxically, no distribution is equal distribution. Still, prohibition completely ignores the principles of Autonomy and Beneficence. Individuals are not given the opportunity to decide what they want for themselves, and those who might find stimulant treatment functionally and emotionally beneficial are denied access to it. Though it errs on the side of safety and equality, a prohibitive approach that precludes self-determination and ignores suffering is ethically unsound and should be avoided.

The current paradigm is still prohibitive in nature, but it makes concessions for the sake of Beneficence. This disease model allows stimulant medications to be prescribed to those who are diagnosed with ADHD, but essentially no one else. Ultimately, the problem that arises is with the principle of Justice. Those who are diagnosed with ADHD are granted the autonomy to refuse certain treatments and choose the one they prefer, however the criteria for diagnosis can be very ambiguous. This can result in other people who might benefit from stimulant treatment being denied access to it. The basis of ADHD diagnosis ultimately leads to an unjust distribution of Autonomy and Beneficence. Only those with diagnoses are afforded the Autonomy and Beneficence they deserve, while those who are not diagnosed are excluded from any choice and potential benefits. It is this violation of Justice that has led to the widespread illicit use of prescription stimulants for their beneficial effects. Though not as heartless as the prohibitive approach, this method is clearly flawed and therefore in need of reform.

The completely unrestrictive approach from the case for enhancement is satisfying for all but one of these principles. It seeks to provide benefit for all who will have it, it gives everyone the right to choose for themselves, and it ensures that all people have equal opportunity for stimulant treatment—Beneficence, Autonomy, Justice. However, it falls short of Nonmaleficence. As exampled previously, there are certainly people who should not be prescribed stimulants due to increased health risks. These people have conditions or complications that make taking stimulants very dangerous, and many could be at risk for harmful, even life-threatening effects. An approach that hands out stimulant medications to anyone and everyone is woefully irresponsible, and therefore not advisable.

Ultimately, the ideal ethical approach seems to fall somewhere between the current method and the free-for-all method. Instead of qualifying people based on need and creating arbitrary restrictions, we should qualify them based on potential for benefit. This would allow for a more equitable access and increased self-determination. Conversely, instead of giving everyone the choice to use or not use stimulants, we should only give it to those whose potential benefits outweigh their potential risks. In this way, Nonmaleficence is not overlooked. I believe this ethical approach would provide an appropriate level of control while allowing for maximization of benefits and free individual choice.

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